

THE INFLUENCE OF TEMPERATURE AND SHADE ON EASTERN BLACK NIGHTSHADE AND HAIRY NIGHTSHADE GERMINATION AND GROWTH. Amy E. Guza, Adrienne M. Rich, Karen A. Renner, and Chad D. Lee, Undergraduate Research Assistant, Graduate Research Assistant, Academic Specialist, and Professor, Michigan State University, East Lansing, MI 48824.

Eastern black nightshade and hairy nightshade are two weed species in the *Solanaceae* family that reduce crop yield and quality in soybean, dry edible bean, and other crops. Eastern black nightshade and hairy nightshade are reported to be shade tolerant. Research was conducted to determine the optimum temperature regime for germination and the influence of shade on the emergence and growth of one population of each of these two nightshade species. Germination over a 14 day period was determined for five day:night temperature regimes: 20:10, 25:15, 25:25, 30:20, 35:25 C. To determine the influence of shade on eastern black nightshade and hairy nightshade emergence, seeds were placed at a 1 cm depth in a sandy loam soil and emergence measured over a 21 day period. Growth chambers were set at a 12 hour photoperiod, with a temperature regime of 30:20 C day:night temperature. Eastern black nightshade and hairy nightshade growth was measured for eight weeks in the greenhouse (16 hour photoperiod, 30:20 C day:night temperature) under 0, 30, 60 and 90% shade cloth. Germination of both nightshade species was greatest at 30:20 C. Shading had no influence on eastern black nightshade emergence but 90% shading reduced hairy nightshade emergence by 35%. Sixty percent shading decreased the leaf area index of eastern black nightshade and hairy nightshade by 68 and 73%, respectively, compared to the no-shade treatment 3 weeks after planting. Ninety percent shading decreased the leaf area index of eastern black nightshade and hairy nightshade by 68 and 87%, respectively. The length and width of the fourth leaf of eastern black nightshade was reduced by 23, 31, and 47% at 30, 60, and 90% shading, respectively, compared to the no-shade treatment when measured 6 weeks after planting. The length and width of the fourth leaf of hairy nightshade was reduced by 7, 32, and 56% at 30, 60, and 90% shading, respectively, compared to the no-shade treatment. This population of Eastern black nightshade appears to be more shade tolerant than hairy nightshade, suggesting that increasing crop density by planting narrow rows or increasing plant populations in the row may reduce the competitiveness of hairy nightshade more than that of eastern black nightshade.